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## Revision of the species of *LISTROCHELUS* of the United States.

BY GEORGE H. HORN, M. D.

THE present essay is intended as the commencement of a work which has long seemed necessary, a new revision of our Melolonthidæ. Since the first revision, (Leconte, Journ. Acad. Ser. 2, vol. ii, 1856), some few new species have been described, a few then unknown recognized, some synonymy corrected, while many new species have been discovered and above all much larger series of all accumulated. These facts together with the additional knowledge acquired in the meantime render the labor somewhat easier, on the one hand, while the increase in the number of the species renders the whole mass rather less amenable to classification by the almost inevitable occurrence of exceptional forms.

At this point I may mention that the types in the cabinet of Dr. Leconte have been freely at my command, and that Mr. Ulke of Washington, has also loaned his material which has been extremely useful, he having in several species the sex not existing in either Leconte's or my own cabinet.

In beginning a study of any tribe of Coleoptera the most important work is the generic separation of the mass of species and a determination of the value of the genera themselves.

The genuine Melolonthini have been divided into three groups by the following table :

Side pieces of metathorax narrow ;

Labial palpi on the under surface of the ligula.....**RHIZOTROGI.**

Labial palpi at the sides of the ligula.....**TOSTEGOPTERÆ.**

Side pieces of metathorax wide.....**MELOLONTHÆ.**

In regard to the difference of position of the palpi in the first two tribes above named, I can only say, that after a dissection of the mouth of *Tostegoptera* and *Lachnosterna* I can find no appreciable difference. The group therefore fails and with it the genus which must take its place with the *Lachnosternæ* in the position originally assigned to it by Dr. Leconte.

Next in order we have the group Rhizotrogi, containing five genera separated in the following manner :

Claws never serrate, with a single tooth beneath.

Ligula deeply emarginate.

Antennæ 10-jointed.....**Eugastra.**

Antennæ 9-jointed.....**Endrosa.**

Ligula nearly truncate.

Labrum bilobed.....**Lachnosterna.**

Labrum concave, not bilobed.....**Gynnis.**

Claws more or less serrate, sometimes toothed.....**Listrochelus.**

The emargination of the ligula, as far as its use for generic separation is concerned, is not a valid character, very many well known and acknowledged species of *Lachnosterna* possess it in a varying degree from a feeble notch to a well defined emargination. The species of *Eugastra* must therefore take place in *Lachnosterna* near *farcta* and *lanceolata*. The two species of *Endrosa* take remote places in *Lachnosterna*; *quercus* as a distinct group near *submucida*; *volvula* near *frontalis* where Dr. Leconte originally intended to place it. (Synopsis p. 239). *Gynnis* is based on a species with the labrum concave and not bilobed. It will be necessary merely to examine the labrum of the species of the *longitarsis* group of *Lachnosterna* to become convinced not only that the character has no value but also that the species (*debilis*) belongs there. An examination of the labrum of *glabripennis* might also add weight to the above.

Having thus rather summarily united five genera by the suppression of four it becomes necessary to defend the sixth, which, from the characters given in the books, seems to have the least claim of all to be retained.

#### **LISTROCHELUS** Blanch.

Head with a carina on the vertex extending from one side to the other slightly posterior to the anterior margin of the eye. Free angle of coxal plate acute and slightly prolonged. Claws frequently pectinate or serrulate.

These three characters or any two of them together serve to separate *Listrochelus* from *Lachnosterna*.

The carina on the vertex seems to be the most important, and is absent entirely in one species only (*senex*), and may be partially obliterated at its middle but visible at the sides. This carina is not of the same character as that seen in *Aplidia* where it is frontal and as far as can be seen merely a matter of sculpture or ornamentation, while the carina of *Listrochelus* is so placed as to restrict the retractile

capability of the head, for, when the head is withdrawn it rests against the anterior margin of the thorax.

The prolongation of the free angle of the coxal plate is a constant character in the present genus and singularly it is present in *Aplidia* also. In all our *Lachnosternæ* the angle is at most rectangular, sometimes obtuse never prolonged.

The pectination of the claws although not by any means constant is peculiar to the genus. The tables of the two sexes which follow give the details in brief. In those species in which the claws are decidedly pectinate and not merely serrulate, the claw is stout and its lower edge is double, or rather there are two edges separated by a deep groove; these are both pectinate, the proximal side of each claw, or that which is nearest to its fellow, has the edge which is most feebly pectinate, the outer edge being most strongly pectinate and bearing the tooth when it exists. This double pectination is peculiar to the male. In the females of these males there may be seen traces of the double edge but never serrulate or pectinate. One species has strongly pectinate claws with the pectination single, that is, from one margin only. The other peculiarities of the claws are spoken of at sufficient length in the descriptions.

The antennæ are always 10-jointed, the joints 3—7 varying considerably in length in the different species. I have not mentioned these variations because I have little faith in their constancy. There are now twelve species in our fauna, five of which are mentioned here for the first time, of the eight previously known one has been suppressed.

The accompanying tables have been prepared at the cost of considerable time and labor and show a remarkable parallelism. They have been arranged for each sex in such a manner that the more specialized types as indicated by the structure of the claws, begin the table, each succeeding species showing a regular gradation from this through the forms of claws of other genera to the simple type of *Scarabæide* claw, a character of rare occurrence among the *Rhizotrogi*.

A supplementary table is also given, the use of which will be seen, it contains those species not in *both* the sexual tables.

*Table for the distinction of known males.*

I.—Claws of anterior and posterior tarsi pectinate.

Claws all pectinate without tooth.

Pectination arising from a double margin. Thorax sparsely punctured..... **disparilis.**

Pectination from a single margin only. Thorax very densely punctured..... **puberulus.**

Anterior outer claw toothed and pectinate.

Outer anterior claw with a feeble tooth at middle. Posterior tarsi short and densely pubescent beneath ..... **scoparius**.

Outer anterior claw toothed near the tip. Posterior tarsi long and normally hairy.

Tooth of anterior claw large. Posterior claws very distinctly pectinate..... **macerosus**.

Tooth of anterior claw small. Posterior claws very feebly pectinate..... **obtusus**.

II.—Claws not pectinate, rarely feebly crenulate, always with a small tooth at middle.

Thorax opaque..... **opacicollis**.

Thorax more or less shining.

Head cribrately punctured. Thorax coarsely and anteriorly densely punctured..... **sociatus**.

Head coarsely, not very densely punctured. Thorax sparsely and not conspicuously punctured..... **falsus**.

III.—Claws similar on all the tarsi and absolutely simple..... **fimbripes**.

The following species are not found in the above table no males being known, *densicollis*, *senex*, *timidus*.

#### *Table for the distinction of known females.*

I.—Anterior claws with a strong tooth near the tip, serrulate posteriorly.

Posterior claws similar, each dentate at middle and serrulate at base.

Pygidium transversely impressed near the tip. Front nearly flat.

Margin of pygidium at tip prolonged..... **disparilis**.

Margin at tip not prolonged..... **scoparius**.

Pygidium slightly gibbous near the tip. Front impressed.

**densicollis**.

Posterior claws dissimilar, the inner serrulate, the outer dentate and serrulate.

Pygidium rather flat, a fine impressed line at middle near the tip, margin at apex prolonged..... **mucerosus**.

II.—Claws with a small tooth at middle and at most obsoletely serrulate at base.

Thorax opaque..... **opacicollis**.

Thorax shining.

Thorax coarsely punctured, more densely in front.

Margin of thorax strongly crenulate..... **sociatus**.

Margin of thorax entire..... **timidus**.

Thorax sparsely punctured over entire surface.

Pygidium oval at tip..... **falsus**.

Pygidium truncate at tip..... **fimbripes**.

III.—Claws absolutely simple on all the tarsi.

Pygidium without marginal line. Hind tarsi long..... **senex**.

Two species *obtusus* and *puberulus* do not appear in the above table, their females being unknown.

The following table is based on characters not sexual and is given merely to attempt to fill the blanks which have of necessity occurred

in the two tables which precede, as it may happen that some cabinet will contain a male or a female not in the appropriate table, but which may be already known only in the opposite sex.

Front rather deeply impressed above the frontal suture.....**densicollis**.

Front not impressed.

Metasternum rather densely punctured and with long dense pubescence.

Thorax very densely and coarsely punctured.....**puberulus**.

Thorax rather sparsely punctured .....**obtusus**.

Metasternum sparsely punctured at least at middle, pubescence sparse.

Thorax unevenly punctured, dense along the apex, pygidium coarsely punctured.....**timidus**.

Thorax with large punctures very unequally placed, pygidium nearly smooth.....**senex**.

Of the above species the males only are known of *puberulus* and *obtusus*, and the females only of *densicollis*, *timidus* and *senex*.

**L. disparilis** n. sp.—Subcylindrical, moderately robust, brownish, moderately shining, very faintly pruinose, surface sparsely clothed with very short pubescence. Head densely and coarsely punctured, frontal suture not impressed, clypeus transverse, subtruncate in front with broadly rounded angles and narrowly reflexed margin. Thorax more than a half wider than long, narrower in front than at base, sides anteriorly moderately arcuate, posteriorly distinctly sinuate, hind angles rectangular, margin coarsely crenulate and sparsely fimbriate with yellowish hairs; disc moderately convex, rather coarsely and irregularly but not densely punctured. Elytra coarsely but not deeply punctured, sutural costa moderately distinct, disc faintly subcostate, the inner more distinct, margin fimbriate. Body beneath moderately densely clothed with long yellowish hair. Abdomen sparsely punctate and with very short hair. Length .72 inch; 18 mm.

*Male*.—Club of antennæ longer than the funicle. Abdomen slightly flattened at middle, last two segments with an impressed line at middle, last ventral very slightly notched at middle. Pygidium convex, coarsely and very sparsely punctured near the tip, more closely and more finely at base. Anterior claws similar, each pectinate along a double margin and with one of the pectinations at middle somewhat longer and stouter than the others. Middle claws similarly pectinate but without any larger pectination. Posterior claws pectinate in the same manner as the anterior claws. Spurs of hind tibiæ slender, acute and similar, the outer one-third longer. Inner side of posterior tibiæ with a few stiff hairs.

*Female*.—Club of antennæ longer than half the funicle. Abdomen convex at middle, last ventral more coarsely punctured. Pygidium sparsely punctate, broadly transversely impressed near the tip, apical margin slightly prolonged. Anterior claws similar, each serrulate and with a strong acute tooth at middle. Middle and posterior claws similarly formed. Spurs of posterior tibiæ rather broader than in the male, slightly arcuate, and with a distinct pellucid margin. The claws of the female are also distinctly pectinate along a double margin, the tooth arising from that margin most distant from the other claw.

This species has entirely the *facies* of a *Lachnosterna* of the *fusca*

group, and is consequently rather unlike the other members of the genus. Its peculiar sexual characters will enable it to be distinguished from any other species.

Occurs in Colorado, New Mexico and Arizona.

**L. puberulus** Lec. New Species, 1863, p. 78.—Oblong oval, brownish ferruginous, surface not pruinose, sparsely clothed with very short erect hair. Head densely and coarsely punctured, frontal suture finely impressed, front flat, clypeus transverse, angles broadly rounded, at middle feebly emarginate, margin moderately reflexed in front. Thorax one-half wider than long, narrower in front than base, sides obtusely subangulate, margin not crenulate, moderately densely fimbriate, disc moderately convex, surface very densely and coarsely punctured. Elytra moderately coarsely punctured, more densely along the suture near the base, gradually more sparsely at sides and apex, margin fimbriate. Body beneath moderately densely hairy. Length .50 inch; 12.5 mm.

*Male*.—Club of antennæ scarcely as long as the funicle. Abdomen moderately convex, sparsely punctured, last segment much shorter than the preceding. Claws alike on all the tarsi, each strongly pectinate on a *single* edge, the outer claw on the middle and hind tarsi have one of the teeth of the pectination near the tip a little stronger. Hind tibiae slightly fimbriate within, spurs slender, tarsus as long as the tibia. Pygidium scarcely convex, sparsely punctate and opaque.

*Female*.—Unknown.

The posterior femora of this species are unusually coarsely punctured, a character not observed in any other. This species resembles in form and size *Luch. tristis*, and may at once be known from any other species by the entire surface of the thorax being densely and coarsely punctured.

One specimen from Cape San Lucas, Lower California.

**L. scoparius** Lec. Synopsis Melolonthidæ, Journ. Acad. Ser. 2, vol. ii, p. 264.—Cylindrical, moderately elongate, rufo-piceous, surface distinctly pruinose, sparsely clothed with short erect hair. Head coarsely but not densely punctured, shining, clypeus transverse, angles broadly rounded, feebly emarginate in front, margin moderately reflexed. Thorax twice as wide as long, narrower in front than at base, sides obtusely subangulate behind the middle, margin coarsely serrulate in front of middle and fimbriate, disc moderately convex, shining, sparsely punctate, punctures closer in front and near the anterior angles. Elytra sparsely punctate, margin fimbriate, sutural and one discal costa moderately distinct. Body beneath densely clothed with long pale hairs, abdomen sparsely punctate. Length .60 inch; 15 mm.

*Male*.—Club of antennæ slightly longer than the funicle. Abdomen flattened, fifth ventral feebly emarginate at middle and with a submarginal elevated line angulate to the front. Sixth ventral suddenly elevated at middle and terminating in two triangular teeth and fimbriate at the sides. Pygidium large, very convex, sparsely punctate. Anterior claws pectinate along a double margin, outer claw with one denticulation longer, simulating a slender tooth.

Middle claws pectinate along a double margin. Posterior claws finely serrulate along a double margin. Posterior tibiae fimbriate with long hairs within, spurs slender, the outer one-fourth longer. Posterior tarsi about as long as the tibiae, stout, densely clothed with moderately long pubescence beneath.

*Female*.—Club of antennae shorter than the funicle. Tarsal claws similar on all the feet, each claw with a strong acute tooth at middle, basal portion distinctly serrulate, apical portion with two or three fine serrations. In addition on the inner side of each claw is a distinct second edge very finely serrulate. Abdomen convex, smooth, terminal segment when normally in position shorter than the preceding. Pygidium nearly as long as wide, moderately transversely impressed at apical third, the space posterior to the impression coarsely punctured, that anterior sparsely punctured, marginal groove moderately deep, margin at sides distinctly reflexed. Hind tarsi slender, a little longer than in the male and nearly as long as the tibiae, the latter sparsely fimbriate within, the spurs slender, slightly arcuate, the outer somewhat larger.

This species has the most remarkable male characters of any in the genus and may thereby be at once known. The female from the table may be difficult to distinguish from that of *disparilis*, which is however a larger species, of darker color and more nearly superficially resembling *Lachnos fusca*.

The male has but one tibial ridge while the female has distinct traces of a second.

Occurs in Arizona.

**L. densicollis** Lec. New Species, 1863, p. 77.—Subcylindrical, moderately elongate, piceo-rufous, surface distinctly pruinose. Head opaque, densely and coarsely punctured, front broadly and moderately deeply impressed above the suture, clypeus transverse, angles broadly rounded, anteriorly subtruncate, margin very feebly reflexed. Thorax one-half wider than long, narrower at apex than base, sides obtusely subangulate, margin feebly fimbriate and obsoletely crenulate, disc moderately convex, coarsely and deeply punctured, punctures dense at apex but somewhat sparser at base. Elytra moderately punctate, sutural and one discal costa feebly elevated. Length .62 inch; 15.5 mm.

*Male*.—Unknown.

*Female*.—Club of antennae shorter than the funicle. Abdomen convex, punctulate, the last segment more densely and coarsely and nearly as long as the preceding. Pygidium sparsely punctate, feebly convex, and with a distinct gibbosity near the apex, apical margin slightly prolonged. Claws similar on all the tarsi, each with a moderately strong acute tooth near the tip and strongly pectinate at base. Hind tibiae with slender, rather long spurs, tarsi as long as the tibia.

The pubescence is so removed from the entire surface of the unique before me that I cannot mention concerning it. There may be no difference in this respect between the present species and *mucoreus*. It is probable that the male characters in the claws do not differ greatly from that species.



**L. mucoreus** Lec. Synopsis Melolonthidæ, Journ. Acad. Ser. 2, vol. ii, p. 263; *texanus* Lec. ibid.—Oblong, subcylindrical, piceo-rufous or rufous, surface distinctly pruinose, sparsely clothed with short erect hair. Head coarsely but not densely punctured, front flat, clypeus transverse, broadly rounded at the sides, margin rather widely reflexed especially at middle. Thorax one-half wider than long, slightly narrower in front than at base, sides rather broadly arcuate, margin fimbriate and feebly serrate in front, disc moderately convex rather coarsely but not densely punctured. Elytra moderately coarsely but sparsely punctate, costæ entirely obliterated, margin sparsely fimbriate. Body beneath moderately densely pilose, abdomen shining, very sparsely punctate. Length .50—.70 inch; 12.5—17.5 mm.

*Male*.—Club of antennæ slightly longer than the funicle. Abdomen feebly flattened at middle, last segment very short. Pygidium very convex at tip, surface sparsely punctate. Anterior claws dissimilar, the outer pectinate along a double margin and with an obtuse tooth near the tip, inner claw pectinate without tooth. Middle claws similar, each pectinate along a double margin. Posterior claws similar to the middle. Posterior tibiæ scarcely fimbriate within, spurs rather slender, outer broader and longer and with a pellucid border at tip. Posterior tarsi slender, longer than the tibia.

*Female*.—Club of antennæ shorter than the funicle. Abdomen convex, fifth ventral slightly gibbous near the tip, last ventral short. Pygidium rather flat, longer than the male, sparsely punctured, opaque at base, apex slightly longitudinally impressed. Anterior claws similar each with a strong acute tooth near the tip, serrulate at base along a single margin only. Middle claws like the anterior. Posterior claws dissimilar, the inner pectinate along a single margin, the outer toothed as in the anterior claws. Posterior tibial spurs nearly equal in length the outer broader, each spatulate at tip with a pellucid margin, tarsi longer than the tibiæ.

One specimen, Cape San Lucas, Lower California.

I am entirely unable to discover any differences of a specific character between *mucoreus* and *texanus*, the types of the latter are merely somewhat smaller and more decidedly ferruginous in color.

Occurs in Texas, New Mexico, Arizona, and the desert region near Fort Yuma, California.

**L. obtusus** Lec. Synopsis Melolonthidæ, Journ. Acad. Ser. 2, vol. ii, p. 261.—Oblong ovate, ferruginous, faintly pruinose, surface sparsely pubescent, hairs longer near the base of the elytra, gradually becoming shorter toward the tip where they are very short. Head coarsely and densely punctured, front flat, clypeus transverse, anteriorly broadly arcuate, margin moderately reflexed. Thorax one-third broader than long, apex narrower than base, sides broadly and regularly arcuate, margin not serrulate and fimbriate with moderately long hair, disc moderately convex, coarsely but not densely punctured. Elytra not densely punctate, sutural costa very feeble. Body beneath moderately densely fimbriate, abdomen very sparsely punctate. Length .54 inch; 13.5 mm.

*Male*.—Club of antennæ longer than the funicle. Abdomen convex, sparsely punctate, fifth segment very slightly longitudinally wrinkled on each side, sixth segment short. Pygidium convex, sparsely punctate and subtruncate at tip. Claws of anterior tarsi dissimilar, the inner pectinate along a double

margin, the outer in addition toothed near the tip. Middle claws similar, each pectinate along a double margin. Posterior claws similar to the middle, the two margins however so close as to appear almost as one. Posterior tibiae with a few stiff hairs within, spurs slightly spatulate and pellucid at tip, the outer much longer, tarsus longer than the tibia.

*Female*.—Unknown.

The differences between this species and *mucoreus* as learned from the male are very feeble, consisting in the less angulated sides of the thorax and the much less distinctly bipectinate character of the claws. In *obtusus* there are moderately long hairs arising from the base of the thorax and elytra not seen in our specimens of *mucoreus*, but these may easily have been removed by accident. I retain the species for the present as distinct more from its facies, in the hope that the discovery of the female may teach more.

One specimen, Kansas.

***L. opacicollis* n. sp.**—Subcylindrical, piceo-rufous, thorax darker and opaque, surface distinctly pruinose, sparsely clothed with short erect hairs. Head cribrately punctured, frontal suture not impressed, clypeus transverse, feebly emarginate at middle, margin moderately reflexed. Thorax more than twice as wide as long, narrower at apex than base, sides very obtusely subangulate behind the middle, margin coarsely crenulate and fimbriate, disc moderately convex, surface opaque, sparsely obsolete punctate. Elytra sparsely punctate and pubescent, surface pruinose, sutural costa feeble, discal costa entirely wanting, margin fimbriate with moderately long hairs. Body beneath moderately punctate, rather sparsely clothed with long whitish hairs. Length .50—.56 inch; 12.5—14 mm.

*Male*.—Club of antennæ longer than the funicle and paler. Abdomen with segments three and five with moderately long hairs at middle, last three segments broadly concave. Pygidium moderately large, convex, shining, sparsely punctate and subtruncate at tip. Claws similar on all the tarsi, each with a small tooth at middle, the basal portion of the claw very finely serrulate, apical portion simple. Posterior tibiae fimbriate within with moderately long hair, the spurs slender, the outer one-fourth longer. Posterior tarsi longer than the tibiae.

*Female*.—Club of antennæ slightly variable in length but always shorter than the funicle. Claws on all the tarsi alike and precisely like those of the male. Abdomen convex, smooth and convex at middle. Posterior tibiae with few hairs within, shorter than the male, spurs shorter, broader and more curved than the male and pellucid at tip. Pygidium more narrowed at tip than male, sparsely punctured, moderately shining. Posterior tarsi shorter than the tibiae.

This species is at once known by its opaque thorax.

The specimens from Arizona and New Mexico have the thorax a little less opaque than those from Utah, and the tarsi a little shorter than in the ♀ from Utah, they agree however in all other characters, and I am unwilling to separate them as distinct, but as these are all

females the discovery of a corresponding male may give some other characters.

Occurs in Utah, Arizona and New Mexico.

**L. sociatus** n. sp.—Oblong ovate, reddish-brown, very faintly pruinose. Head slightly convex, densely cribrate punctate, clypeus transverse, feebly subtruncate, angles broadly rounded, margin very narrowly reflexed. Thorax one-half wider than long, slightly narrower at base than apex, sides obtusely subangulate behind the middle, margin strongly crenulate from apex to base and fimbriate with moderately long hair, disc moderately convex, coarsely and moderately deeply punctured, punctures denser in front along the margin. Elytra coarsely and sparsely but not deeply punctured, sutural costa feebly elevated, surface not pubescent. Body beneath clothed with long white hairs, abdomen very sparsely punctate. Length .54 inch; 13.5 mm.

*Male*.—Club of antennæ nearly as long as the funicle. Abdomen moderately convex, fifth segment with a subtriangular gibbosity at middle, sixth nearly as long as the fifth. Pygidium broad, moderately convex, sparsely punctured. Claws alike on all the tarsi, each with a small tooth near the middle and under high power a feeble crenulation. Posterior tibiæ stout, coronary ridge strong, spurs slender, slightly curved and somewhat pellucid at tip, tarsi about as long as the tibiæ.

*Female*.—Club of antennæ small, ovate. Abdomen convex without special characters, last ventral shorter than the preceding. Pygidium wider than long, rather flat, sparsely punctate. Claws similar on all the tarsi, each with a moderately strong acute tooth at middle but with no crenulation. Hind tibiæ stout, spurs rather broader and more curved than the male, tarsi evidently shorter than the tibiæ.

This species is one of the few on which I have not found any elytral pubescence. It may be known by its strong posterior tibiæ, which resemble those of *Ligyris*.

Occurs in Nevada, Idaho and Oregon.

**L. timidus** n. sp.—Oblong, subcylindrical, pale castaneous, surface shining. Head densely and moderately coarsely punctured, front flat, clypeus transverse, angles broadly rounded, apex feebly emarginate, margin moderately reflexed. Thorax nearly twice as wide as long, apex slightly narrower than base, sides arcuate, very obtusely subangulate, margin entire, not fimbriate, disc moderately convex, shining, coarsely punctured, sparsely at base and sides, more densely along the apical margin. Elytra coarsely but not densely punctured, sutural and one discal costa feebly elevated. Metasternum at middle coarsely and very sparsely punctured, punctures denser toward the sides, surface sparsely pubescent. Length .40 inch; 10 mm.

*Male*.—Unknown.

*Female*.—Club of antennæ ovate, shorter than the funicle. Abdomen moderately convex, sparsely punctate, last segment scarcely half as long as the preceding. Pygidium coarsely but not densely punctured. Claws alike on all the tarsi, each with a moderately strong acute tooth near the middle and very finely crenulate toward the base. Hind tibiæ with slender unequal spurs, tarsi as long as the tibiæ.

This species is very distinct by its size color, sculpture beneath and general absence of pubescence. The frontal ridge so characteristic of the species of this genus is here completely wanting, and very little is left of *Listrochelus* excepting the feeble serrulation of the claws.

One specimen, Arizona.

**L. falsus** Lec. Synopsis Melolonthidæ, Journ. Acad. Ser. 2, vol. ii, p. 264.—Oblong oval, pale ferruginous, surface distinctly pruinose and sparsely clothed with very short erect hairs. Head densely and coarsely punctured, front flat, clypeus transverse, angles broadly rounded, margin moderately reflexed, anteriorly feebly emarginate. Thorax nearly twice as wide as long, slightly narrower in front than at base, sides obtusely subangulate at middle, posteriorly slightly sinuate, margin crenulate and fimbriate, disc moderately convex, surface shining, moderately coarsely but not densely punctured. Elytra very sparsely punctate, sutural costa feeble, discal costæ obsolete. Body beneath moderately densely hairy, abdomen obsoletely sparsely punctate. Length .56 inch; 14 mm.

*Male*.—Club of antennæ longer than the funicle. Fourth and fifth ventral segments suddenly concave, sixth slightly concave at middle and longitudinally impressed. Pygidium convex, sparsely punctate, apex truncate. Claws of anterior tarsi dissimilar, the inner slender and simple, the outer with a very small tooth at middle and an extremely feeble trace of denticulation. Middle claws with a very fine tooth at middle. Posterior claws with a fine tooth at middle but without denticulation. Posterior tibiae with a few stiff hairs within, spurs slender, outer slightly longer, tarsi slightly longer than the tibiae. Sixth ventral nearly as long as the preceding.

*Female*.—Club of antennæ slightly shorter than the funicle. Abdomen convex, sparsely punctulate, fifth ventral with a single transverse plica at middle and very little longer than the sixth. Pygidium moderately convex, sparsely punctate and shining, marginal groove moderately deep, apex oval. Claws alike on all the feet, each with a small but quite distinct tooth at middle and without denticulation. Posterior tibial spurs slender, pellucid at tip, the outer somewhat longer, the tarsus about the length of the tibia.

This species is about the size and form of *Lachnosterna tristis*. Both sexes have the posterior tibiae unicolorate.

Occurs in Kansas, Colorado and New Mexico.

**L. fimbripes** Lec. Synopsis Melolonthidæ, Journ. Acad. Ser. 2, vol. ii, p. 264.—Subovate, ferruginous, surface distinctly pruinose, sparsely clothed with moderately long erect hairs. Head coarsely and moderately densely punctured, clypeus transverse, angles broadly rounded, margin moderately reflexed, at middle feebly emarginate. Thorax more than twice as wide as long, apex slightly narrower than base, sides obtusely subangulate and slightly sinuate posteriorly, margin serrulate in front and fimbriate, basal margin with moderately long erect hairs, disc moderately convex, surface shining, very sparsely and not deeply punctate. Elytra sparsely punctate, smoother near the tip, sutural and one discal costa feebly elevated. Body beneath moderately densely clothed with rather long hairs. Length .48 inch; 12 mm.

*Male*.—Club of antennæ longer than the funicle. Abdomen slightly flattened, posterior margin of third segment somewhat elevated, fifth and sixth segments longitudinally impressed, the fifth more deeply, the two segments equal in length. Pygidium convex, sparsely punctate, tip distinctly truncate. Claws alike on all the tarsi, slender and almost absolutely simple and with merely a feeble trace of crenulation at base under high power. Posterior tibiae fimbriate within with moderately long hairs, spurs slender the outer longer, tarsi distinctly longer at tip. First joint of anterior tarsus distinctly prolonged at tip.

*Female*.—Club shorter than the funicle, ovate. Abdomen convex, sparsely punctured, last two segments with coarser punctures, the fifth with a vague transverse impression in front. Pygidium strongly narrowed to the tip with nearly straight sides, tip truncate, surface sparsely punctured. Claws alike on all the tarsi, each with a moderate sized acute tooth at middle and without any evidence of crenulation, except very feebly on the posterior claws. Posterior tibiae with a few stiff hairs within, spurs slender as in the male but pellucid at tip, tarsi decidedly shorter than the tibiae. Last ventral segment as long as the preceding.

This species has nearly the form and appearance of *falsus*, but is rather shorter.

Occurs in Kansas, Colorado and New Mexico.

*L. senex* n. sp.—Subcylindrical, brownish piceous, feebly pruinose. Head moderately densely and coarsely punctured, front flat, suture finely impressed, clypeus transverse, angles broadly rounded, anteriorly feebly emarginate, margin narrowly reflexed. Thorax one-half wider than long, slightly narrowed in front, sides broadly arcuate, margin crenulate in front, disc convex, surface with large, moderately deep punctures, sparsely and irregularly placed. Elytra scarcely wider than the thorax, rather coarsely and sparsely punctate, sutural costa feebly distinct. Metasternum with coarse rather sparse punctures surface sparsely fimbriate. Abdomen nearly smooth. Length .42 inch; 10.5 mm.

*Male*.—Unknown.

*Female*.—Club of antennæ nearly as long as the funicle. Abdomen feebly convex, last segment shorter than the preceding. Pygidium slightly convex, impunctured, with scarcely any marginal groove. Claws alike on all the tarsi, each absolutely simple and slender. Posterior tibial spurs rather slender, unequal, slightly pellucid at tip. Tarsi slender one-half longer than the tibiae.

Even in the absence of the other sex this species may be known by its comparatively, very convex thorax with large punctures distantly placed, deeply impressed and by the metasternum coarsely punctured and sparsely pubescent. On the outer claw of the hind tarsus is a scarcely observable trace of a tubercle which replaces the tooth of the other species.

One specimen, probably from the Llano Estacado, Texas.